

## AMENDMENTS TO THE CLAIMS

Please amend the claims as follows:

1. (Cancelled).

2. (Currently Amended) The method according to claim 12, wherein the temporal occurrence is selected from the group consisting of an age of the biological functional entity and a period during which that functional entity is active.

3. (Currently Amended) The method according to claim 12 or claim 2, wherein said biochemical constituent is selected from the group consisting of an organism, a tissue, a cell, an organite, and a molecule.

4. (Currently Amended) The method according to claim 12, wherein said transformation is selected from the group consisting of a cellular transformation and a molecular transformation.

5. (Currently Amended) The method according to claim 12, wherein said transformation is a molecular transformation selected from: a covalent molecular transformation, itself selected from the group consisting of a covalent transformation of proteins corresponding to a post- translational traductional transformation or a co-translational traductional transformation, a covalent RNA transformation corresponding to RNA synthesis or maturation, and a covalent DNA transformation corresponding to DNA synthesis, damage or repair; and a non-covalent transformation itself selected from the group consisting of a hydrophobic transformation, a transformation caused by Van der Waals forces, electrostatic forces or attraction between an electronegative atom of one molecule and a hydrogen atom of another molecule, and a steric transformation caused by attraction between adjacent atoms.

6. (Previously Presented) The method according to claim 12, wherein some of said

function biological entities are included in a higher biological functional entity.

7. (Previously Presented) The method according to claim 12, wherein at least some of said biological functional entities include lower biological functional entities.

8. (Previously Presented) The method according to claim 12, wherein at least some functional entities constitute the environment of at least some other functional entities with which they interact.

9. (Previously Presented) The method according to claim 12, wherein the biological system further comprises intangible biological functional entities modeled by temporal occurrences and where applicable spatial and morphological occurrences.

10. (Previously Presented) The method according to claim 9, wherein said intangible biological functional entities comprise biochemical reactions.

11. (Previously Presented) A model for implementing a method according to claim 12, the model comprising one or more tangible biological functional entities modeled by at least: a morphological occurrence comprising at least a biochemical constituent that identifies the biological functional entity, and at least a transformation representing the way in which that constituent behaves as a function of the space-time context; a spatial occurrence representing at least a spatial characteristic of the biological functional entity; and a temporal occurrence representing at least a temporal characteristic of the biological functional entity.

12. (Currently Amended) A method of simulating a transformation in a biological system, the method comprising:

- a first step of modeling the biological system by one or more data represented tangible biological functional entities, the state of each tangible biological entity being represented by values assigned to occurrences in a metamodel comprising:

    a morphological occurrence comprising at least a biochemical constituent that identifies one or more persistent properties of the biological functional entity, and at

least a morphological transformation representing the way in which the biochemical constituent behaves as a function of the space-time context;

a spatial occurrence representing at least a spatial characteristic of the biological functional entity; and

a temporal occurrence representing at least a temporal characteristic of the biological functional entity; and

- a second step of representing the behavior of the biological system over time by the trajectory of the states of each data represented biological functional entity in a frame of reference consisting of shape, time, and space, by recursively progressively determining, for each data represented biological functional entity, the effects of the changes in the values assigned to the occurrence on the functioning of the biological functional entity if the at least one morphological transformation assigned to the biological functional entity is produced as a function of the space-time context, as the interactions of the biological functional entities go alone, the second step being performed recursively so as to simulate the behavior of the biological functional entities over time.